Luctatio Aroideis I. *Caladium* and *Xanthosoma*

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The tribe Colocasieae (Araceae) comprises a dozen genera of terrestrial herbs found throughout the tropics, several species of which are cultivated for their edible starchy tubers. In the neotropics the two principal genera of this tribe are *Caladium* Vent. and *Xanthosoma* Schott. *Caladium*, with about fifteen species, is found in tropical South America and the Lesser Antilles, and is most diverse in the northern Andes. *Xanthosoma*, with about 45 species, also has its center of diversity in the northern Andes, with secondary centers in southern Brazil, the West Indies, and Mexico. Many of the species of *Xanthosoma* are weedy and occur abundantly in pastures and ditches, along roads and waterways, and at the margins of clearings. Caladiums are much less common and mostly inhabit dark sites in the forest understory.

The technical distinction of these genera is in the structure of the ovary: in *Xanthosoma* the ovary is 3-4 locular with axile placentation and is capped by a broad discoid style which is united to the styles of adjacent flowers. In *Caladium* the ovary is unilocular with 2-3 intrusive parietal placentae bearing ovules near the base; a discoid style is absent and the stigma is sessile on the rounded ovary.

These characters are difficult to observe in dried specimens, especially when the fleshy flowers have rotted into a slimy mass before drying, as is frequently the case. In practice the genera are usually distinguished by a number of other features summarized below:

Xanthosoma	*Caladium*
1. Large plants, 0.5-5 m tall	1. Diminutive plants, less than 0.5 m
2. Weedy, growing in full sun	2. Forest understory plants, not weedy
3. Stem erect, rarely tuberous	3. Stem a globose tuber
4. Peduncle usually much shorter than the petiole	4. Peduncle usually longer than the petiole
5. Spadices clustered in monochasia	5. Spadices solitary
6. Leaf sagittate or pedatisect, never peltate	6. Leaf sagittate or ovate, often peltate

In the course of studies of Caladium and Xanthosoma in Ecuador I have found two species which are intermediate between the genera. One of them is here described as a new species of Caladium:

Caladium plowmanii Madison, sp. nov.

Herba terrestris ad 30 cm alta. Rhizoma repens, interdum bulbilliferum, glabrum, internodia 10-14 mm crassa, 1-4 cm longa. Petiolus folii 10-25 cm longus, 2-3 mm crassus, vagina purpureo-maculata 2.5-4 cm longa instructus. Lamina glabra, late hastata, lobo antico 14-16 cm longo, lobis posticis 10-12 cm longis, supra saturate viridis, subtus praeter venas viridis pallida. Inflorescentia monochasialis spadicipus (4-5) composita. Pedunculus teres, 2 mm crassus, 20-25 mm longus, viridis; spatha flavovirens, albidescens, infra medium laete purpureomaculata, 5-6 cm longa, 15-20 mm supra basin constricta, pars supera 15 mm lata ubi aperta. Spadix albidus, 30-35 mm longus, 2-2.5 mm crassus, pars carpellata 12-14 mm longa, pars staminata 19-22 mm longa. Pistillum 1-1.5 mm latum, circa 0.5 mm altum, stigmate sessile rotundato coronatum. Synandrium 4-6 lobatum, circa 1 mm latum, 0.3 mm altum.

HOLOTYPE: ECUADOR: Prov. Napo: 31 miles W of Lago Agrio on road to Baeza, moist hillside forest, elev. 2100 ft., 30 July 1974, Plowman, Sheviak, & Davis 3979 (GH)
ADDITIONAL MATERIAL: Propagules of the type collection were sent to the Selby Botanical Gardens where the species is now cultivated. The illustration of the inflorescence (Fig. 1) is based on live material from this cultivated plant. As more individuals of the clone mature, specimens will be made for distribution to various herbaria.

The name honors Dr. Timothy Plowman of Harvard University, intrepid collector of neotropical aroids.

Caladium plowmanii is most closely related to C. longipodum K. Krause from Prov. Pastaza, Ecuador, which is distinguished by its smaller, sparsely pilose, narrowly sagittate leaves which are held stiffly erect in contrast to the spreading, glabrous, broadly hastate leaves of C. plowmanii.

As can be seen in Figure 1 the ovary of Caladium plowmanii is unilocular with two parietal (sub-basal) placentae, and the stigma is small and sessile; this clearly relegates the species to Caladium. However in a number of its other features C. plowmanii is closer to Xanthosoma. It has an elongate caudex, (creeping in the wild collection, erect in cultivated plants), rather than a globose tuber. The lamina is not peltate, as in most of the other species of Caladium with sagittate or hastate leaves, and the spadices are borne on short peduncles in monochasia or 4-5 spadices rather than solitary on long peduncles, as is typical of Caladium.

A second Ecuadorian species which is intermediate between the two genera is Xanthosoma eggersii (Engler)Engler, Figure 2. When cultivated material of this species flowered at the Selby Botanical Gardens I decided that it was an undescribed species of Caladium. However, after dissecting a number of flowers I began to think that it might be a Xanthosoma, and finally determined it as X. eggersii (Engl.)Engl. based on Caldium eggersi Engl. This specimen, (Dodson 5911, SEL) is apparently the first collection since the type was collected in 1897.

The fact that Engler had the same problem with determining the generic affinities of this species is indicative of its intermediate position. In cross section the ovary is 2-3 locular with axile placentation; yet the septa are so weakly united in the center that in sectioning they frequently separated and then appeared as 2 or 3 deeply intrusive parietal placentae, as in Caladium. As can be seen in Figure 2, the ovary is capped by a mantle-like style bearing a capitate stigma at its apex. However, the carpellate flowers are spread far apart on the spadix and adjacent styles are not coherent as in other species of Xanthosoma. This lax-flowered condition is found as well among the sterile flowers of the central portion of the spadix, which are purple in color and of unusual shapes quite unlike the white, hexagonal-prismatic sterile flowers of other species of Xanthosoma. The peduncle in X. eggersii is equal to or longer than the petiole, (a Caladium trait), and is so weak that it is only the encircling leaf sheath which holds the inflorescence erect.

The occurrence of intermediates between genera is not uncommon in the Araceae. In-between situations in the transition from axile to parietal to basal placentation are found in the tribe Monstereae where placentation is nonetheless a useful generic character. In the case of Xanthosoma and Caladium the nature of the style remains a single definitive character for purposes of taxonomy. The existence of a few intermediates at the geographic center of diversity of the tribe should not diminish the usefulness of a syndrome of additional characters which help to distinguish the genera in the rest of their ranges. However, the occurrence of these intermediates does raise the suspicion that other species described in the past on vegetative features may proove to have been placed in the wrong genus once their flowers are carefully studied.

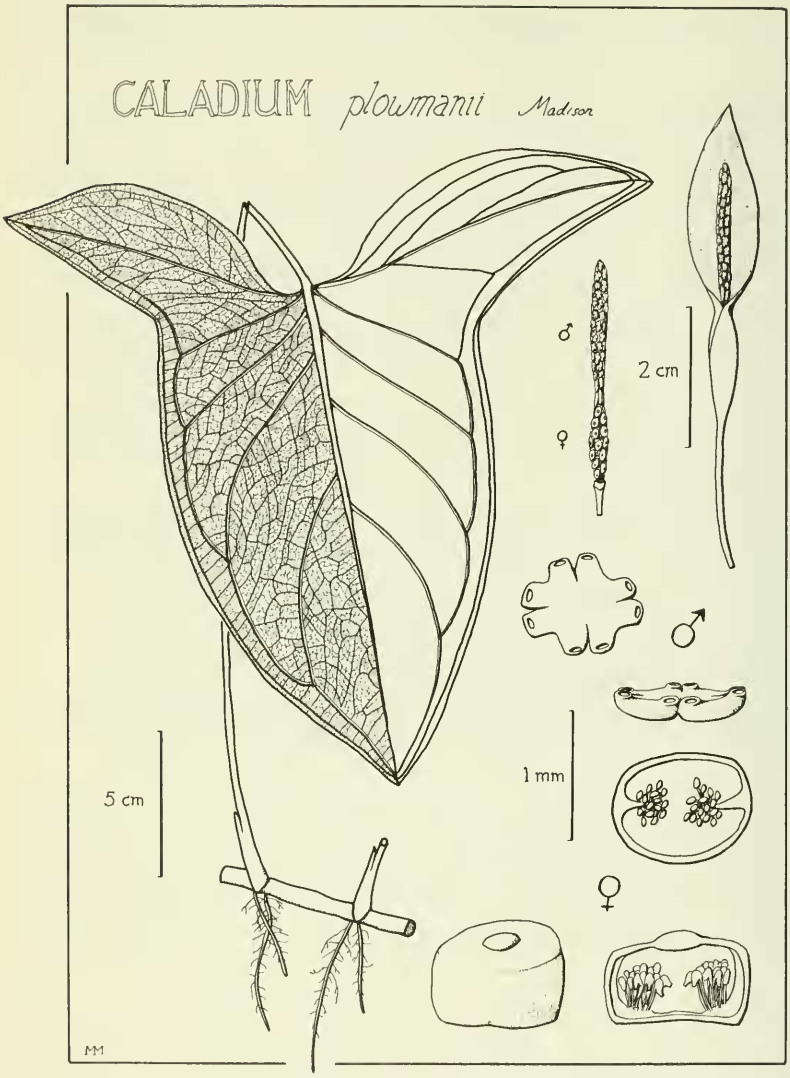

Figure 1. Caladium plowmanii Madison

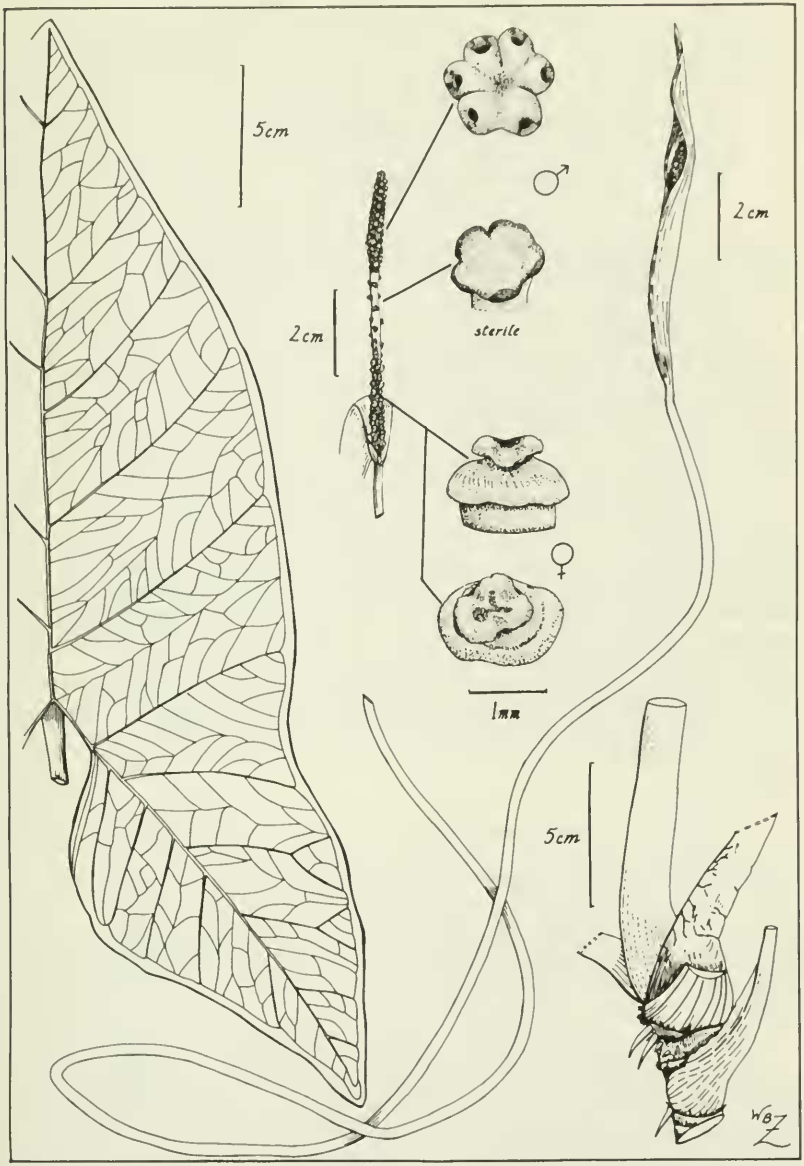

Figure 2. Xanthosoma eggersii (Engl.) Engl., drawn by Wendy Zomlefer from a cultivated specimen (Dodson 5911) from Ecuador